

FIG. 1

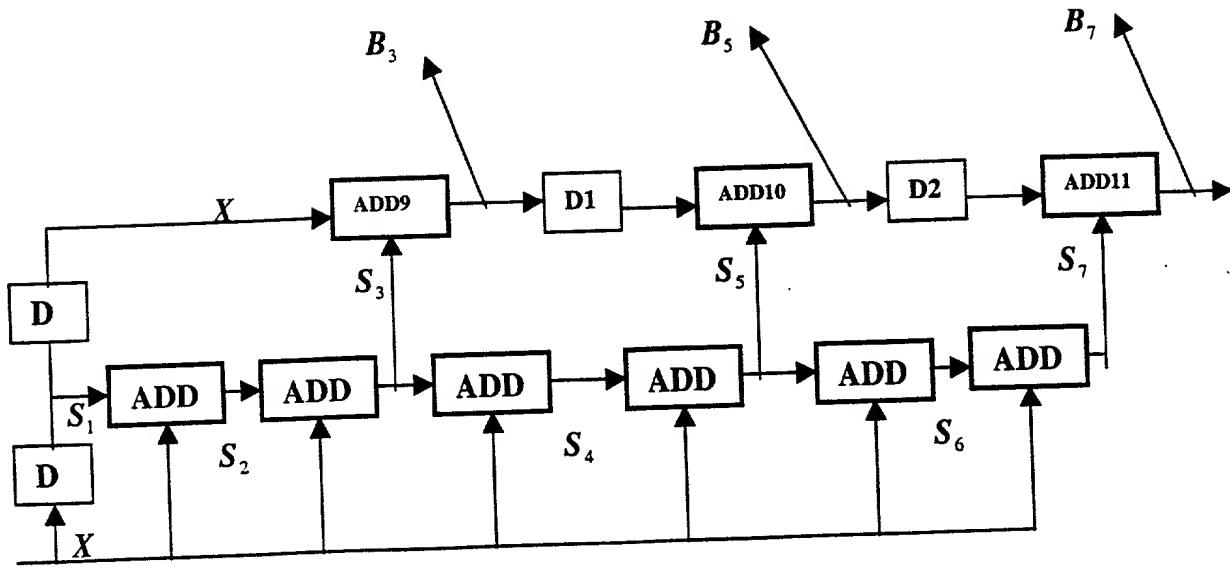


FIG. 2

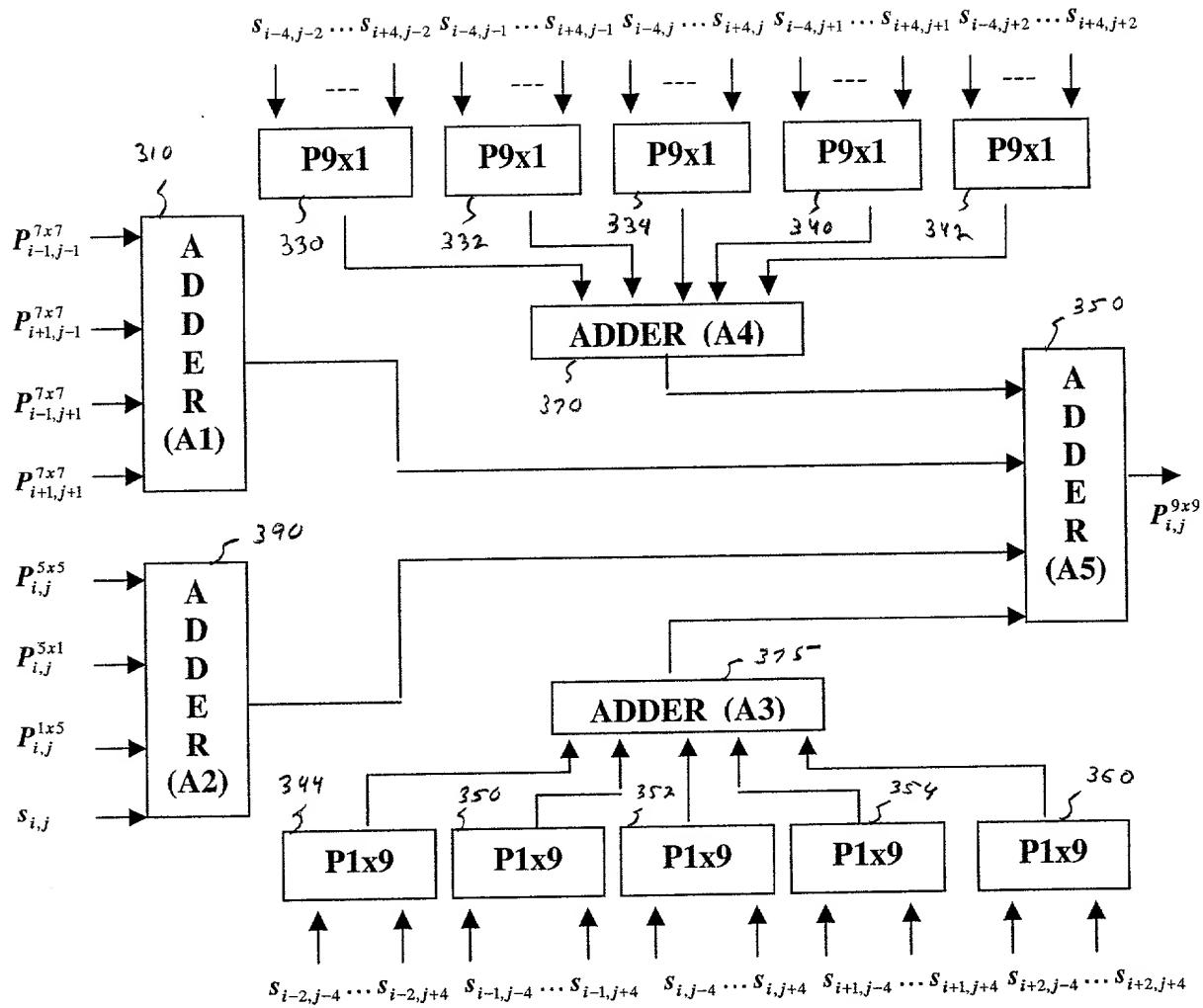


FIG 3

↗
300

FIG. 4

$$\mathbf{P}^{kxk} = \begin{bmatrix} \mathbf{P}_{0,0}^{kxk} & \mathbf{P}_{0,1}^{kxk} & \cdots & \cdots & \mathbf{P}_{0,N-1}^{kxk} \\ \mathbf{P}_{1,0}^{kxk} & \mathbf{P}_{1,1}^{kxk} & \cdots & \cdots & \mathbf{P}_{1,N-1}^{kxk} \\ \vdots & \vdots & \ddots & \ddots & \vdots \\ \vdots & \vdots & \ddots & \mathbf{P}_{i,j}^{kxk} & \vdots \\ \vdots & \vdots & \ddots & \ddots & \ddots \\ \vdots & \vdots & \ddots & \ddots & \ddots \\ \mathbf{P}_{M-1,0}^{kxk} & \mathbf{P}_{M-1,1}^{kxk} & \cdots & \cdots & \mathbf{P}_{M-1,N-1}^{kxk} \end{bmatrix}$$

FIG. 5

$$S = \begin{bmatrix} s_{0,0} & s_{0,1} & & \cdots & & & s_{0,N-1} \\ s_{1,0} & \cdot & \cdot & \cdot & \cdot & \cdot & s_{1,N-1} \\ \cdot & \cdot & s_{i-1,j-1} & s_{i-1,j} & s_{i-1,j+1} & \cdot & \cdot \\ \vdots & \cdot & s_{i,j-1} & s_{i,j} & s_{i,j+1} & \cdot & \cdot \\ \cdot & \cdot & s_{i+1,j-1} & s_{i+1,j} & s_{i+1,j+1} & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ s_{M-1,0} & s_{M-1,1} & & \cdots & & & s_{M-1,N-1} \end{bmatrix}$$

$$\begin{aligned}
F_{k \times k} &= \begin{bmatrix} 1 \\ 2 \\ 3 \\ \vdots \\ \frac{k-1}{2} \\ \vdots \\ 3 \\ 2 \\ 1 \end{bmatrix} * \begin{bmatrix} 1 & 2 & 3 & \cdots & \frac{k-1}{2} & 4 & 3 & 2 & 1 \end{bmatrix} \\
&= \begin{bmatrix} 1 & 2 & 3 & \cdots & \frac{k-1}{2} & \cdots & 3 & 2 & 1 \\ 2 & 4 & 6 & \cdots & \frac{2(k-1)}{2} & \cdots & 6 & 4 & 2 \\ 3 & 6 & 9 & \cdots & \frac{3(k-1)}{2} & \cdots & 9 & 6 & 3 \\ \vdots & \vdots & \vdots & \ddots & \vdots & \ddots & \vdots & \vdots & \vdots \\ \frac{k-1}{2} & \frac{2(k-1)}{2} & \frac{3(k-1)}{2} & \cdots & \frac{(k-1)*(k-1)}{4} & \cdots & \frac{3(k-1)}{2} & \frac{2(k-1)}{2} & \frac{k-1}{2} \\ \vdots & \vdots \\ 3 & 6 & 9 & \cdots & \frac{3(k-1)}{2} & \cdots & 9 & 6 & 3 \\ 2 & 4 & 6 & \cdots & \frac{2(k-1)}{2} & \cdots & 6 & 4 & 2 \\ 1 & 2 & 3 & \cdots & \frac{k-1}{2} & \cdots & 3 & 2 & 1 \end{bmatrix}
\end{aligned}$$

FIG. 6

$$F_{9 \times 9} = \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 4 \\ 3 \\ 2 \\ 1 \end{bmatrix} * [1 \ 2 \ 3 \ 4 \ 5 \ 4 \ 3 \ 2 \ 1] = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 4 & 3 & 2 & 1 \\ 2 & 4 & 6 & 8 & 10 & 8 & 6 & 4 & 2 \\ 3 & 6 & 9 & 12 & 15 & 12 & 9 & 6 & 3 \\ 4 & 8 & 12 & 16 & 20 & 16 & 12 & 8 & 4 \\ 5 & 10 & 15 & 20 & 25 & 20 & 15 & 10 & 5 \\ 4 & 8 & 12 & 16 & 20 & 16 & 12 & 8 & 4 \\ 3 & 6 & 9 & 12 & 15 & 12 & 9 & 6 & 3 \\ 2 & 4 & 6 & 8 & 10 & 8 & 6 & 4 & 2 \\ 1 & 2 & 3 & 4 & 5 & 4 & 3 & 2 & 1 \end{bmatrix}$$

FIG. 7

$$\mathbf{P}^{1xk} = \begin{bmatrix} \mathbf{P}_{0,0}^{1xk} & \mathbf{P}_{0,1}^{1xk} & \cdot & \cdots & \cdot & \cdot & \mathbf{P}_{0,N-1}^{1xk} \\ \mathbf{P}_{1,0}^{1xk} & \mathbf{P}_{1,1}^{1xk} & \cdot & \cdot & \cdot & \cdot & \mathbf{P}_{1,N-1}^{1xk} \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \vdots & \cdot & \cdot & \mathbf{P}_{i,j}^{1xk} & \cdot & \cdot & \vdots \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \mathbf{P}_{M-1,0}^{1xk} & \mathbf{P}_{M-1,1}^{1xk} & \cdot & \cdots & \cdot & \cdot & \mathbf{P}_{M-1,N-1}^{1xk} \end{bmatrix}$$

FIG. 8

$$\boldsymbol{P}^{kx1} = \begin{bmatrix} \boldsymbol{P}_{0,0}^{kx1} & \boldsymbol{P}_{0,1}^{kx1} & \cdot & \cdots & \cdot & \cdot & \boldsymbol{P}_{0,N-1}^{kx1} \\ \boldsymbol{P}_{1,0}^{kx1} & \boldsymbol{P}_{1,1}^{kx1} & \cdot & \cdot & \cdot & \cdot & \boldsymbol{P}_{1,N-1}^{kx1} \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \vdots & \cdot & \cdot & \boldsymbol{P}_{i,j}^{kx1} & \cdot & \cdot & \vdots \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \boldsymbol{P}_{M-1,0}^{kx1} & \boldsymbol{P}_{M-1,1}^{kx1} & \cdot & \cdots & \cdot & \cdot & \boldsymbol{P}_{M-1,N-1}^{kx1} \end{bmatrix}$$

FIG. 9